

REGULATION II – PERMITS AND FEES

RULE 242

EMISSION OFFSETS GENERATED BY THE VOLUNTARY PAVING OF UNPAVED ROADS

INDEX

SECTION 100 – GENERAL

- 101 PURPOSE
- 102 APPLICABILITY

SECTION 200 – DEFINITIONS

- 201 EMISSION OFFSETS
- 202 ENFORCEABLE
- 203 PERMANENT
- 204 QUANTIFIABLE
- 205 ROADWAY SEGMENT
- 206 SURPLUS

SECTION 300 – STANDARDS

- 301 ~~APPLICATION PROCESS FOR EMISSION OFFSETS~~ OFFSET PLAN
REQUIREMENTS
- 302 ~~STANDARDS FOR APPROVING APPLICATIONS~~ CALCULATION
METHODOLOGY
- 303 ~~NOTIFICATION OF COMPLETION~~ STANDARDS FOR APPROVING OFFSET
PLANS
- 304 ~~TIMELINE FOR USING OFFSETS~~ OFFSET PLAN COMPLETION
- 305 MAINTENANCE RESPONSIBILITIES

SECTION 400 – ADMINISTRATIVE REQUIREMENTS (Non- Applicable)

- 401 ~~PREVIOUS TRAFFIC COUNTS~~

SECTION 500 – MONITORING AND RECORDS

- 501** RECORDS RETENTION
- 502 RECORDKEEPING AND REPORTING
- 503 TEST METHODS
- APPENDIX A

**MARICOPA COUNTY
AIR POLLUTION CONTROL REGULATIONS**

**REGULATION II – PERMITS AND FEES
RULE 242**

**EMISSION OFFSETS GENERATED BY THE VOLUNTARY PAVING
OF UNPAVED ROADS**

SECTION 100 – GENERAL

- 101 PURPOSE:** To establish enforceable procedures ~~to calculate for~~ calculating emission reductions of particulate matter at 10 microns or less, ~~created to be used as offsets~~ through the voluntary paving of unpaved roads, and to be used as offsets to meet New Source Review (NSR) requirements.
- 102 APPLICABILITY:** This rule applies to ~~persons~~ applicants subject to NSR requirements, who need ~~these~~ PM-10 offsets for the construction of new major stationary sources or major modifications to an existing major stationary source in the Maricopa County PM-10 non-attainment areas and those applicants who also voluntarily elect to generate emission reductions of particulate matter at 10 microns or less by paving unpaved roads in the Maricopa County PM-10 non-attainment area.

SECTION 200 – DEFINITIONS: ~~For the purpose of this rule the following definitions shall apply. See Rule 100 (General Provisions and Definitions) of these rules for definitions of terms that are used but not specifically defined in this rule. For the purpose of this rule the following definitions shall apply:~~

- 201 EMISSION OFFSETS** ~~—Reductions of emissions~~ Emission reductions that have occurred and continue to occur within the Maricopa County PM -10, used to mitigate emission increases from new or modified major sources. obtained from existing sources that offset the emissions increase from the new source or modifications of an existing source and provide a net air quality benefit.
- 202 ENFORCEABLE** - Offsets are enforceable if they are independently verifiable, program violations are defined, those liable can be identified, and the Administrator and the Control Officer can apply penalties and secure appropriate corrective action where applicable.
- 203 PERMANENT** - Continuing or enduring for the duration of the New Source Review (NSR) obligation.

- 204** **QUANTIFIABLE** — ~~Offsets Emission reductions~~ that can be reliably and replicably measured by adhering to the quantification protocol set forth in Section 300 of this rule.
- 205** **ROADWAY SEGMENT** - A section of roadway between two definitive points, including but not limited to intersections, end of roads or other demarcation points and ~~expressed as a mile or fractions thereof,~~ that define a change in the roadway structure. The length of such segments shall be expressed in miles or fractions thereof.
- 206** **SURPLUS** - The amount of emission reductions from the paving of an unpaved road that are not:
- 206.1** Required by federal, state, or local law ~~and/or~~ the Clean Air Act; or
 - 206.2** Included, ~~or~~ required or relied upon in the existing federally approved State Implementation Plan (SIP); or
 - 206.3** Included in the Agricultural Best Management Plan; or
 - 206.4** Used by any source to meet any other regulatory requirement including but not limited to, at the time offsets are used, Reasonable Available Control Technology (RACT); or
 - 206.5** Required by any other legal settlement or consent decree; or
 - 206.6** ~~Subject to~~ Included in any SIP-related requirements, including but not limited to: Reasonable Further Progress (RFP), milestones, attainment demonstration, conformity regulations, emissions inventories, operating permit regulations, operating permits issued under Maricopa County or Arizona operating permit regulations, any requirement contained in any new source review permits such as BACT and LAER determinations, limitations on operations of raw materials, emission reductions used for offset or netting purposes, and assumptions used in an attainment demonstration; or
 - 206.7** Subject to be included in any of the following as contained in the SIP-approved PM -10 Plan or in the latest locally-adopted rules or PM plan: Rule 310.01 or Rule 310 of the Maricopa County Rules and regulation, the resolutions listed in 40 CFR 52.120(c) (100), Arizona Revised Statutes Sections 49-457 and 49-504.4, or contingency measures.

SECTION 300 - STANDARDS

301 ~~APPLICATION PROCESS FOR EMISSION- OFFSETS PLAN~~

REQUIREMENTS: ~~The application for certification and issuance of offsets shall consist of an offset plan that includes all of the following, at a minimum: Applicants who choose to use the provisions of this rule to meet their NSR PM-10 offset requirements shall submit an Offset Plan. The Offset Plan shall at a minimum contain the information specified in Sections 301.1 through 301.8.~~

301.1 ~~Identification of the source of~~ A statement that the offsets will be the offsets as those offsets generated from the paving of unpaved roads identified within the Offset Plan; and

301.2 ~~Identification of the state or local government responsible for maintaining the road after it is paved; and~~ A statement that the unpaved road(s) will be paved according to state or local government paving standards; and

301.3 ~~A list of roads that will be evaluated for paving are proposed for paving including their location and roadway segment identification; and~~

301.4 ~~A copy of a letter or agreement from the appropriate state or local government verifying that the paved road(s) will be adopted into the state or local government transportation network, if not already a part of the network; and~~

301.5 ~~Indicates that the unpaved road will be paved according to state or local government standards; A statement that identifies the minimum requirements for maintaining the road according to state and local government standards after it is paved; and~~

~~b. Indicates that the paved road will be adopted into the state or local government transportation network, if not already a part of the network; and~~

~~Identifies the maintenance responsibilities for maintenance of the road after it is paved.~~

301.6 ~~Calculations of both vehicle miles traveled and the emission(s) reductions from the voluntary paving of roads determined by the methods listed in Section 503 of this rule and discussed below; Data and calculations that quantify vehicle miles traveled for each road segment ;and~~

301.7 Data and calculations that quantify emissions from each roadway segment before and after paving; and

301.8 Results of any silt content testing performed on the unpaved roads according to Section 503.

302 CALCULATION METHODOLOGY

302.1 Calculations of both vehicle miles traveled and the emission(s) reductions from the voluntary paving of roads, for each road segment shall be determined according to the procedures described below.

a. Vehicle Miles Traveled (VMT): For the purpose of calculating vmt/day and vmt/year for ~~offset emission reduction~~ calculations, ~~a source requesting emission offsets~~ the applicant shall conduct two traffic counts to determine the vehicle miles traveled per day (vmt/day) and per year (vmt/year) for each roadway segment. each lasting 24 hours for measuring vehicular traffic on each road segment that is to be paved. Additional procedures shall be used as listed below:

- ~~i. —Both~~ One traffic counts count shall be conducted on a non-holiday weekdays-weekday and one traffic count shall be conducted on a non-holiday weekend.
- ~~ii. The calculations shall be performed using time weighted averages of the two separate traffic counts; Each traffic count shall measure vehicular traffic over a 48 hr. period.~~
- ~~iii. The source shall calculate vehicle miles traveled per day(vmt/day) by multiplying traffic count results by the length of the road segment in miles to the nearest 1/10 of a mile; and The vmt/day and vmt/year calculations for each roadway segments shall be based on the time weighted averages of the two separate traffic counts for that particular roadway segment.~~
- ~~iv. Daily and monthly seasonal adjustment factors obtained from the 1999 Freeway Management System provided by the Arizona Department of Transportation for paved roads shall be applied to the average count per day to calculate the annual vehicle miles traveled for the purpose of the offset program.~~

iv. Vehicle miles traveled per day (vmt/day) shall be calculated by multiplying traffic count results by the length of the roadway segment in miles to the nearest 1/10 of a mile.

v. ~~— If the source has already conducted traffic counts on the segment of the road to be paved prior to (date of adoption of the rule) then these traffic counts may be used for the purpose of providing vmt/day for offset calculations. —~~ Daily and monthly seasonal adjustment factors obtained from the 1999 Freeway Management System provided by the Arizona Department of Transportation for paved roads shall be applied to the average count per day to calculate the annual vehicle miles traveled for the purpose of the offset program by multiplying the appropriate factor by the average count per day.

vi. Traffic counts conducted prior to (insert rule effective date) for the major modifications to the Arizona Public Service West Phoenix Power Plant and the Salt River Project Santan Generating Plant ~~shall be~~ are grandfathered. All future projects must comply with Sections 302.1a, i-iv listed above.

b. Emissions From Unpaved and Paved Roads:

i. The calculations and empirical constants that are to be used to calculate emissions for unpaved and paved roads are found in Appendix A of this rule. If available and properly obtained, the values resulting from source-specific tests for surface material silt content , mean vehicle weight, surface material moisture content, mean vehicle speed and exhaust brake/wear/tear must be used. If not available, then values that meet the criteria of Section 503 of this rule or the default values in Appendix A content may be used.

ii. The emission reduction associated with the paving of a segment of unpaved road shall be calculated as the difference, in tons per year, between the emissions from the road in the unpaved condition and the emissions from the road in the paved condition.

303 STANDARDS FOR APPROVING APPLICATIONS-OFFSET PLANS:

303.1 The Control Officer will approve an emission offset plan based upon the information required under Section 301. ~~if he/she verifies that the offset~~ This information must demonstrate that the emission reductions are quantifiable, permanent, enforceable, and surplus. and results in an actual reduction in emissions. ~~These qualities shall be verified by written records submitted to the Control Officer and approved.~~

303.2 The Control Officer shall issue a written approval of the Offset Plan, indicating which roadway segment(s) may be paved.

304 NOTIFICATION OF OFFSET PLAN COMPLETION:

304.1 When the applicant has completed paving any of the roads roadway segment(s) specified in Section 303.2, the applicant shall submit to the Control Officer ~~The source or user of the offsets requesting the offsets shall notify the Control Officer when the paving and the amount of the roadway identified in Section 301.3 is complete~~ a summary report that details each roadway segment(s) paved and documentation certifying completion of the road paving.

304.2 The Control Officer shall issue a certificate for the quantity of emission reductions actually generated, as indicated by the data submitted pursuant to Section 304.1.

304.3 The quantity of emission reductions certified by the Control Officer pursuant to Section 304.2, may be used to meet NSR PM-10 offset requirements.

~~**304 — TIMELINE FOR USING OFFSETS:** The emission offsets cannot be used by the source or user of the offsets until the Control Officer verifies that paving was completed.~~

305 MAINTENANCE ROAD INTEGRITY RESPONSIBILITIES: After the paving of the roadway segment(s) identified in Section 304.1 is completed, the applicant, for a period of 30 years shall:

305.1 ~~The local or state government shall provide~~ Review the report obtained pursuant to the requirements of Section 502.1 upon receipt and determine if the roadway segment(s) identified in Section 304.1 is intact. This is demonstrated by at least a 40-60% pavement condition score according to the pavement condition analysis criteria listed in the American Association of State

~~Highway and Transportation Officials (AASHTO). to the source or user of the offsets that includes, at a minimum, an evaluation of the pavement surface conditions and the date of the evaluation at least every 2 years. The report shall also list the locations of the roads that were evaluated.~~

305.2 ~~The source or user of the offsets shall submit these records to the Control Officer. If the local or state government fails to maintain the roadway any time in the 30 year period then the source or user of the offsets must find other offsets to replace these lost offsets. If any part of the roadway segment(s) identified in Section 304.1 is not intact, then the applicant must find other offsets to replace the quantity of offsets which no longer exist due to the deterioration of the subject roadway segment(s).~~

SECTION 400 - ADMINISTRATIVE REQUIREMENTS

SECTION 500 - MONITORING AND RECORDS

501 RECORDS RETENTION: Records shall be kept a minimum of thirty (30) years ~~after from the date the road is paved.~~

502 RECORDKEEPING AND REPORTING: After the paving of the roadway segment(s) identified in Section 303.2 is completed, the applicant A ~~source utilizing emission reduction offsets produced by the paving of unpaved roads shall maintain and also provide to the Control Officer, the following written records:~~

502.1 ~~A copy of the local or state governments' report evaluating the condition of each roadway segment(s) identified in Section 304.1 and; Calculations that quantify vehicle miles traveled;~~

502.2 ~~A new report shall be obtained at least once every two years evaluating the condition of each roadway segment(s). Calculations that quantify emissions from the road, both unpaved and paved for the roads that have been paved;~~

502.3 ~~Paving completion records that indicate the location of the particular roadway segment(s) that was paved and the date that the paving was completed.~~

502.4 Road maintenance records which reflect the agreement for maintaining the paved roadway segment(s).

502.4 ~~Road maintenance records which reflect the agreement for maintaining the paved road; and~~

502.5 ~~Results of any silt content testing performed on the unpaved roads according to Section 503.~~

503 TEST METHOD: In lieu of the default values for non-empirical constants provided in Appendix A, applications may ~~contain~~ rely on values ~~based on~~ obtained from source-specific testing. Source - specific silt content tests must be consistent with EPA's "Compilation of Air Pollutant Emission Factors", (AP-42), Fifth Edition, Volume 1, Appendix C.1 and Appendix C.2, July 1993. Any other source -specific tests must be documented in the application and are subject to approval by Maricopa County Environmental Services Department (MCESD) and the United States Environmental Protection Agency (EPA).

APPENDIX A

1. UNPAVED ROADS:

a. The formula for estimating pounds of size-specific particulate emissions for vehicles traveling on publicly accessible roads, dominated by light duty vehicles is:

Equation #1

$$E = \frac{k (s/12)^a (S/30)^d}{(M/0.5)^c} - C$$

where k, a, ~~b~~, c, and d are empirical constants given in Table A below and

E = size - specific emission factor (lb/VMT)

s = surface material silt content (%)

M = surface material moisture content (%)

S = mean vehicle speed (mph)

C = emission factor for 1980's vehicle fleet exhaust, brake wear and tear.

c. The source characteristics s, and M in this formula are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

$$1 \text{ lb / VMT} = 281.9 \text{ g / VKT}$$

TABLE A - CONSTANTS FOR EQUATION #1 UNPAVED PUBLIC ROADS

CONSTANT	PM-2.5	PM-10
k (lb/VMT)	0.27	1.8
a	1	1
b	-	-
c	0.2	0.2
d	0.5	0.5
Quality Rating	C	B

—— " —" = not used in the emission factor equation

TABLE C-B - DEFAULT VALUES FOR EQUATION #1 –UNPAVED PUBLIC ROADS

DEFAULT	
s (%)	3.8
W	-
M	0.03 -13 %
S	20 mph
C	0.00047 lb / VMT

2. PAVED ROADS:

The quantity of particulate emissions from resuspension of loose material on the road surface due to vehicle travel on a dry paved road may be estimated using the following empirical expression:

Equation #3

$$E = k (sL/2)^{0.65} (W/3)^{1.5} - C$$

where:

E = particulate emission factor (having units matching the units of k)
k = particulate size multiplier for particle size range and units of interest
sL = road surface silt loading (grams per square meter) (g/m²)
W = average weight (tons) of the vehicles traveling the road
C = emission factor for 1980s vehicle fleet exhaust, brake wear and tire wear.

The particulate size multiplier (k) above varies with aerodynamic size range. To determine particulate emissions for a specific particle range, use the appropriate value of k in Table E.

**ABLE B C-- PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION
(k constant)**

SIZE RANGE	g/VKT	g/VMT	lb/ VMT
PM -2.5	1.1	1.8	0.0040
PM -10	4.6	7.3	0.016
PM -15	5.5	9.0	0.020
PM -30	24	38	0.082

TABLE F D - DEFAULT VALUES FOR EQUATION #3 - PAVED ROADS

DEFAULT VALUES	UNITS
sL(g/m ²) - public roads	0.23 grams/m ²
W	3.74 tons
C	0.00047 lb/ VMT